

AVIAN USE OF ROADSIDE HABITAT IN THE SOUTHERN DRIFT PLAINS OF NORTH DAKOTA AND IMPLICATIONS FOR CATTAIL (*TYPHA* SPP.) MANAGEMENT

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Abstract

We determined avian use of roadside rights-of-way to develop proper management strategies for the manipulation of roadside cattail. Cattail management is a technique used to reduce nesting and roosting habitat for problematic blackbird species, which might feed on sunflower crops in the vicinity of cattail-dominated wetlands. Thirty quarter sections (1 quarter section \approx 64.75 ha) located in the Southern Drift Plains of North Dakota served as our study units. Roadside habitat along two 0.5 mile (\approx 0.8 km) transects bordering these quarter sections was surveyed to assess avian use. Additionally, nest surveys were conducted to provide an index of breeding bird use of this roadside habitat. Finally, roadside habitat was surveyed for a number of different habitat variables. We found 49 different species during the surveys. Of the 2,529 birds found in this habitat, 1,479 (41.5%) were blackbirds. Blackbirds were also the primary nesting birds, contributing to 89% of the active nests found in roadside habitat. In terms of avian use and nesting, blackbirds, especially redwings, were the dominant bird species using roadside cattail. With proper management of roadside habitat, potential effects on non-blackbirds can be minimized, and nesting habitat for blackbirds can be reduced. Our data indicate that a loss in nesting habitat will likely result in fewer blackbirds and a subsequent reduction in sunflower damage.

Introduction

Experimental field studies on reducing dense cattail (*Typha* spp.) stands in wetlands results in a decrease in blackbird (red-winged blackbirds, yellow-headed blackbirds, and common grackles) use and, in some cases, an increase in use by waterfowl and other birds (Solberg and Higgins, 1989; Linz et al., 1994; Linz et al., 1996). With this reduction in blackbird use, we see a concomitant drop in damage to nearby sunflower fields. If not protected, sunflower fields

adjacent to wetland habitat can suffer severe damage (Hothem et al., 1988; Otis and Kilburn, 1988). One area of possible high productivity for blackbirds, especially redwings, is roadside wetland habitat. Roadside rights-of-way provide a unique management option because there is no need to contact multiple landowners for permission to manage wetland vegetation. Prior to manipulation of roadside habitat, data on both blackbird and non-blackbird avian use of this habitat is necessary in order to develop proper management strategies. Thus, the major objective of this study was to determine avian use of roadside habitat. It is also the goal of this study to assess the relationships between bird species, number, and habitat variables.

Materials and Methods

Study Area. The study area consisted of thirty randomly selected quarter sections (1 quarter section \approx 64.75 ha) containing at least 200 linear meters of cattail. These quarter sections were located in the Southern Drift Plains of North Dakota (Figure 1). Counties in this region containing surveyed quarter sections were Stutsman, Ransom, Barnes, and Sargent. This area was selected because previous studies have shown a high density of breeding red-winged blackbirds in this region (Nelms et. al., 1994; Wimberly et. al., 2002). As a result of glaciation, this area of the Prairie Pothole Region contains a high density of wetlands (Euliss et. al., 1999). Land in the region is used primarily for agriculture, including high yields of sunflower, which are damaged by blackbirds. Surveys of these quarter sections were conducted during June 2001 and 2002.

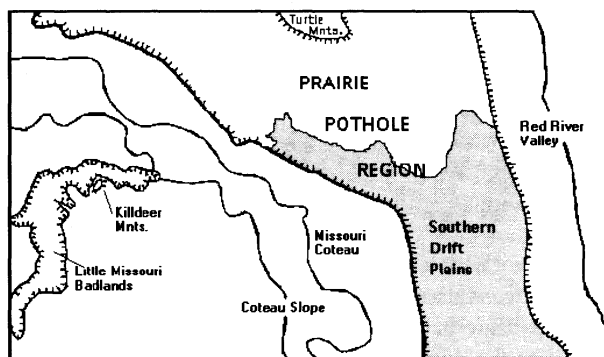


Figure 1. Map of the Southern Drift Plains of North Dakota.

Avian Use Surveys. Roadside habitat along two 0.5 mile (\approx 0.8 km) transects bordering these quarter sections was surveyed in order to assess avian use. Avian use surveys were initiated at sunrise and were terminated four hours thereafter. The species, number, and location of birds within these transects were recorded. In addition to morning avian use surveys, nest surveys were conducted to provide an index of breeding bird use of this roadside habitat.

Habitat Assessment. Roadside grass density was surveyed using a visual obstruction method (Camp and Best, 1994); cattail density was determined using a stem count method. Ancillary data were collected on cattail stand length, water depth, and inter-cattail stand distances. Habitats adjacent to the roadside were also categorized.

Statistical Analysis. Abundance and nest data were tested for normality using normal probability plots; homogeneity of variances were tested using a Hartley's test. Logarithmic transformations were performed on nest data to correct for deviations from normality and homogeneity of variance. Paired *t*-tests were conducted on abundance and nest data between blackbirds and non-blackbirds. Bird abundance was further analyzed using analysis of variance and Duncan's multiple comparison tests. All statistical tests were conducted using an alpha level of 0.05.

Results and Discussion

We found 2,529 birds representing 49 different species during the two study years. In 2001, 1,206 birds representing 38 species were observed, with 805 representing blackbird species (red-winged blackbirds, yellow-headed blackbirds, and common grackles), while the remaining 401 birds represented non-blackbirds. In 2002, we saw an increase in the number of birds, though blackbird numbers decreased; 1,323 birds representing 42 species were observed, with 674 representing blackbird species, while the remaining 649 birds represented non-blackbirds. In 2001, we observed significantly more blackbirds than non-blackbirds per transect. The numbers of observed blackbirds and non-blackbirds per transect was not significantly different in 2002 (Figure 2). We also compared our numbers of individual blackbird species with non-blackbird numbers (Figure 3). In 2001, we located 496 nests, and 181 of these nests, represented by 10 species, contained eggs and young and were designated as active. Of the active nests, 164 were blackbird nests, and 158 of these nests were from red-winged blackbirds. In 2002, we located 329 nests; 126 of these nests were active. In 2002, active nests were represented by 11 species. Of the active nests, 109 were blackbird nests, and 87 of these nests were from red-winged blackbirds. In 2001, we found significantly more blackbird nests than non-blackbird nests per transect. In 2002, we did not find a significant difference in blackbird versus non-blackbird nest numbers per transect (Figure 4). In the second year of our study, cattail management was observed on 15 of our 30 quarter sections. Management practices included burning, mowing, and plowing. These practices resulted in fewer cattail stands observed as well as decreased cattail density within cattail stands.

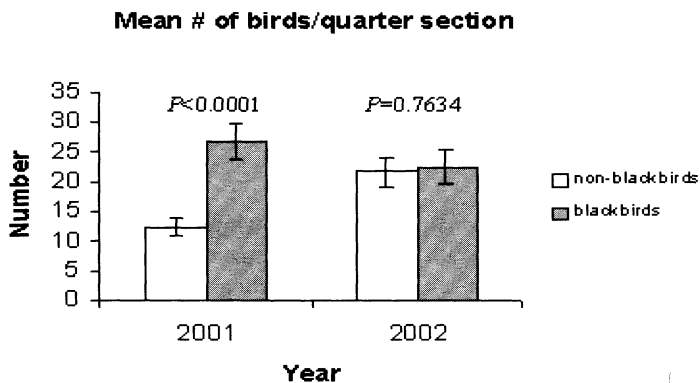


Figure 2. Comparison of mean blackbird and non-blackbird avian use numbers.

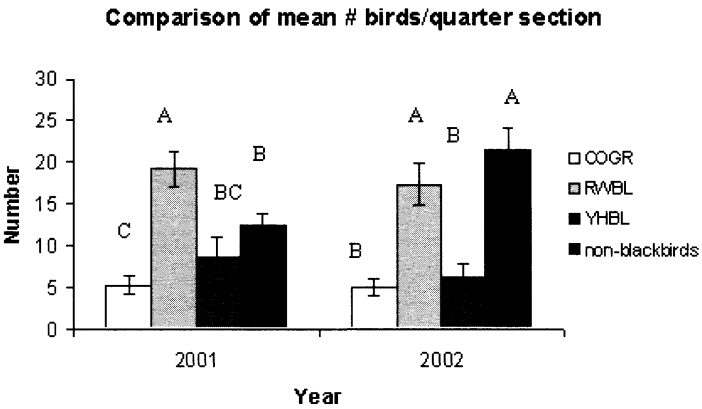


Figure 3. Comparison of mean avian use numbers using a Duncan's multiple comparison test. COGR=common grackle, RWBL=red-winged blackbird, and YHBL=yellow headed blackbird. Species with different letters are significant at $\alpha=0.5$.

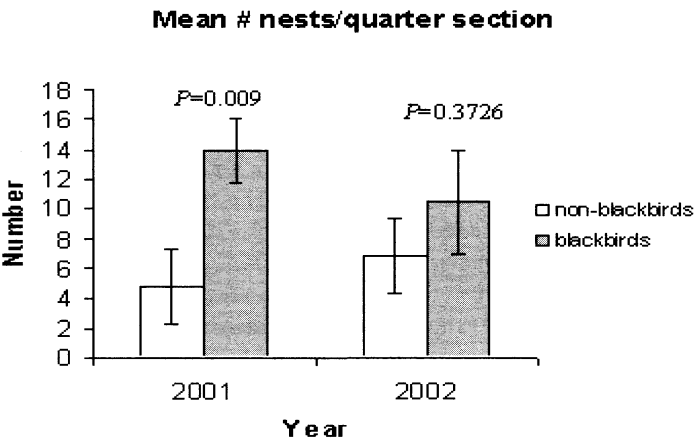


Figure 4. Mean number of blackbird and non-blackbird nests occurring in roadside habitat.

Conclusions

Based on avian use and nesting data, blackbirds, especially red-winged blackbirds, are the dominant bird species using roadside cattail. With proper management of roadside habitat, potential effects on non-blackbirds can be minimized, and nesting habitat for blackbirds can be reduced. Though preliminary, our data indicate that a loss in nesting habitat will likely result in

fewer blackbirds and subsequently might reduce sunflower damage. Also, management of cattail habitat will likely result in an increase in the abundance of non-blackbirds, especially waterfowl.

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